Chapter 7

Maintenance and Troubleshooting

This chapter covers post-installation maintenance instructions for the SP201-SA. It describes the commands that will help you troubleshoot the SP201-SA and keep it operating smoothly. It also presents a list of problems that could occur during installation or maintenance, and suggests actions to try before calling Technical Services. This chapter includes the following sections:

If you have tried all recommended actions but still have not resolved the problem, contact Encore Networks Technical Services at ***support@encorenetworks.com***, 703-318-4350 (voice), or 703-318-4371 (fax). Be prepared to furnish your currently installed hardware configuration, the software release you are using, and detailed information about the problem.

Caution: The SP201-SA is not designed to be serviced in the field. If the SP201-SA malfunctions and you are unable to isolate the problem, contact Encore Networks as indicated above. Do not remove the cover or disassemble the SP201-SA, as doing so may void its warranty.

7.1 Commands in an SP201-SA Session

To execute commands for the SP201-SA, you first need to establish a session between the SP201-SA and a user-supplied control console, as described in Section 1.5, *Connecting to the Control Console*. After you establish this session, you will use a command line interface to execute the operational commands listed in Table 7-1.

Table 7-1 lists monitoring commands. The configuration commands are discussed in the configuration chapters.

Note: In all commands, make sure you type the port number or trunk number that corresponds to the port you are configuring, regardless of the port or trunk number shown in the instructions.

For details of SP201-SA port numbering, see the Note in Section 1.3, *Connecting the SP201-SA to the Telephony Network*.

Table 7-1. Maintenance and Troubleshooting Commands for the SP201-SA *(1 of 4)*

Command	Description
alias	Defines numbers 0–9 to represent frequently used commands. See Section 7.2.1.2, *The alias Command*.
coldstart	Resets configurable parameters to factory defaults and resets the SP201-SA. You use this command after downloading new software to the SP201-SA. See Section 2.4.3, *Coldstarting the SP201-SA*. **Caution:** Using this command causes all user-defined settings to be lost. In addition, any calls in progress are dropped.
config *x*	Configures specified items as described below. See Section 7.2.2, *The config Commands*.
config traceflags	**No Longer Available.** See Section 7.2.5.3, *The trace isdnmsg Command*, and Section 7.2.5.4, *The trace isupmsg Command*.
help	Displays a list of commands you can use to provision, monitor, or troubleshoot the SP201-SA. See Section 7.2.1.1, *The help Command*.
history	Lists the most recently used commands. See Section 7.2.1.3, *The history Command*.
reset x	Resets specified items as described below. Type **`reset help`** for a list of *reset* commands.
reset chan	Resets specified channels to their initial states. See Section 7.2.3.1, *The reset chan Command*.
reset stats	Resets statistical counters to initial values. See Section 7.2.3.2, *The reset stats Command*.
reset systimer	Resets the relative clock time to 0 (zero). See Section 7.2.3.3, *The reset systimer Command*.

Table 7-1. Maintenance and Troubleshooting Commands for the SP201-SA *(2 of 4)*

Command	Description
show x	Shows specified information as described below. Type **`show help`** for a list of *show* commands.
show alarms	Displays information about the SP201-SA's trunk alarms. See Section 7.2.4.1, *The show alarms Command*.
show almrelay	Shows trunk alarm propagation. See Section 7.2.4.2, *The show almrelay Command*.
show ani	Displays the ANI substitution table. See Section 7.2.4.3, *Viewing the ANI Table*. **Note:** This command is available only if the optional ANI feature is included in the software.
show banner	Displays the application banner, listing information about the SP201-SA. See Section 7.2.4.4, *The show banner Command*.
show buffers	Displays the size of message buffer pools. See Section 7.2.4.5, *The show buffers Command*.
show ccstates	Displays each ISDN channel's SS7–ISDN Call Control state and last event. See Section 7.2.4.6, *The show ccstates Command*.
show clocks	Displays clocking information. See Section 7.2.4.7, *The show clocks Command*.
show connections	Displays CIC/timeslot/peer timeslot relationships. See Section 7.2.4.8, *The show connections Command*.
show dchans	Displays signaling information for ISDN trunks. See Section 7.2.4.9, *The show dchans Command*.
show events	Displays a list of the events and states for each protocol. See Section 7.2.4.10, *The show events Command*.
show fgd	Displays the information digits translation table for Feature Group D. See Section 7.2.4.11, *The show fgd Command*.
show framers	Displays the configuration and status of the trunks on the Line Interface Module (LIM). See Section 7.2.4.12, *The show framers Command*.

Table 7-1. Maintenance and Troubleshooting Commands for the SP201-SA *(3 of 4)*

Command	Description
show hardware	Displays the hardware configuration. See Section 7.2.4.13, *The show hardware Command*.
show states	Displays the current states for all trunks and timeslots. See Section 7.2.4.14, *The show states Command*.
show stats	Displays the reset statistics. See Section 7.2.4.15, *The show stats Command*.
show template	Displays the IAM & ACM template numbers configured for all channels. See Section 7.2.4.16, *The show template Command*.
show time	Displays the SP201-SA's system time. See Section 7.2.4.17, *The show time Command*.
show trace	Displays a list of channels on the SP201-SA, indicating those that have *tracechan* enabled. See Section 7.2.4.18, *The show trace Command*.
show trunks	Displays trunk framing, protocol, and SS7 signaling link information. See Section 7.2.4.19, *The show trunks Command*.
show version	Displays the SP201-SA software product's application version. See Section 7.2.4.20, *The show version Command*.
trace *(before SignalPath software version 1070)*	**No Longer Available.** See Section 7.2.5.2, *The trace isup Command*.
trace *(in SignalPath software version 1070 and later)*	Starts automated trace functions or stops all trace functions. See Section 7.2.5.5, *The trace Command*.
trace cas	Displays signaling on Timeslots between CAS and peer protocol. See Section 7.2.5.1, *The trace cas Command*.
tracechan	**No Longer Available.** See Section 7.2.5.1, *The trace cas Command*.
trace isdnmsg	Enables ISDN raw message traces. See Section 7.2.5.3, *The trace isdnmsg Command*.

Table 7-1. Maintenance and Troubleshooting Commands for the SP201-SA *(4 of 4)*

Command	Description
trace isup	Traces all or specified details of SS7/C7 messages. See Section 7.2.5.2, *The trace isup Command*.
trace isupmsg	Enables ISUP raw message traces. See Section 7.2.5.4, *The trace isupmsg Command*.
warmstart	Resets the SP201-SA but maintains configured parameters. See Section 2.4.1, *Warmstarting the SP201-SA*.

7.2 Monitoring and Troubleshooting the SP201-SA Software

The commands in this section help you review the configuration of the SP201-SA software and determine whether it is performing as you intend.

Note: To configure the SP201-SA, see Chapter 2, *Configuration Overview*.

7.2.1 User Assistance Commands

The commands in the following subsections help you see which commands are available, which commands you have used recently, and which alias commands you can use. Another command dumps (i.e., shows most recent values) for a channel.

7.2.1.1 The help Command

You can use the *help* command to display a complete list of the commands available for use on the SP201-SA.

How to Use the help Command

1 At the `user>` prompt, type **`help`** and press **Enter**.

❖ Information similar to the following is displayed:

```
user> help
*** MAIN COMMAND HELP ***

assign    - Assign the CIC range to be used on this card
coldstart - Reset configurable parameters to factory defaults and reset card
config    - Configure specified items - use "config help" for more information
dumpchan  - Dump CAS channel data for troubleshooting
help      - Display this help screen
reset     - Reset specified item(s) - use "reset help" for more information
show      - Show specified information - use "show help" for more information
trace     - Trace SS7 messages
tracechan - Displays information about the CAS protocol for troubleshooting
traceiw   - Displays messages between the Q767 and CAS state machines
warmstart - Reset card while maintaining configurable parameters

user>
```

Note: To get additional information on the *config*, *show*, or *reset* commands, type **`config`**, **`show`**, or **`reset`** without any arguments.

7.2.1.2 The alias Command

The alias command lets you define the numbers 0 through 9 to represent frequently used commands.

How to Use the alias Command

1 At the `user>` prompt, type **`alias`** and press **Enter**.

- ❖ The list of alias commands is displayed.

```
user> alias
********************************************************************************
***************************** COMMAND ALIAS LIST *******************************
********************************************************************************
0: alias
1: history
2: help
3: show help
4: show banner
5: show version
6: show hardware
7: config help
8: warmstart
9: coldstart
********************************************************************************
user>
```

Note: According to this list, you can see the banner by typing **4** and pressing **Enter**.

```
user> 4
4: show banner
********************************************************************************
*                                                                              *
*                        +++ SignalPath Product Line +++                       *
*                                                                              *
*                     Application: ETSI ISDN/R2 Standalone                     *
*                      Application Part Number: 15174.0097                     *
*                        Package Part Number: 15175.0097                       *
*                        Release Date: 11/07/02 16:57:57                       *
*                                                                              *
*                                                                              *
*                             Encore Networks, Inc.                            *
*                              45472 Holiday Drive                             *
*                            Dulles, Virginia 20166                            *
*                               TEL: 703-318-7750                              *
*                               FAX: 703-787-4625                              *
*                          http://www.encorenetworks.com                       *
*                                                                              *
*                                                                              *
*                Copyright (c) 2002-2003 Encore Networks, Inc.                 *
*                             All Rights Reserved                              *
*                                                                              *
********************************************************************************
user>
```

2 To change the definition of a command, type **`alias a`** and press **Enter**, where *a* is a number 0 to 9.

❖ A prompt similar to the following is displayed.

```
user> alias 4
Current command string for alias
4: show banner
Enter new command string [1-76 chars/# to delete/CR to keep
current]==>
4:
```

3 Type the new command you wish this alias number to represent, and press **Enter**. (For example, type **`show stats`** and press **Enter**.)

❖ A prompt confirms the new definition for the alias number.

```
4: show stats
Alias 4 updated
user>
```

4 You can test the new definition by typing the alias number and pressing **Enter**.

```
user> 4
4: show stats
*******************************************************************************
***************************** CARD STATISTICS *********************************
*******************************************************************************
Number of non-error exits since last coldstart = 0
Number of error exits since last coldstart     = 0
Percentage of buffers remaining at last exit   = 100%
*******************************************************************************
user>
```

7.2.1.3 The history Command

The history command displays the most recently used commands. To use the command, type **`history`** and press **Enter**. The console displays the list

of commands recently used. (Note that the last command shown is always *history*, because you have just entered that command.)

```
user> history
*********************************************************************************
************************** COMMAND HISTORY LIST **************************
*********************************************************************************
035: assign cics
036: config timeslots
037: config cics
038: config connections
039: reset
040: reset chan
041: reset stats
042: reset systimer
043: dumpchan
044: show connection
045: show connections
046: show almrelay
047: reset
048: reset systimer
049: history
*********************************************************************************
user>
```

7.2.2 The config Commands

To see a list of *config x* commands, type **`config`** or **`config help`** and press **Enter**. The console will display a list of the *config* commands available in the SP201-SA software, similar to the following.

```
user> config
*** CONFIG COMMAND HELP ***

alarms      - Enable/Disable reporting of alarms on a trunk (span)
              Warning: Interrupts traffic if a live trunk is disabled
cics        - Modify the CIC connectivity
clocks      - Select a clock source for framing
connections - Configure timeslot and CIC mapping - Auto & manual modes
dt          - Configure the channel parameters for the selected
              channel(s)
framer      - Configure the framer parameters for a trunk (span)
logging     - Enable or disable display of logging messages
sp200       - Configure several card level options
```

Most *config* commands are used only when configuring the SP201-SA. See the appropriate chapters for the protocols you are configuring.

7.2.3 The reset Commands

To see a list of reset commands, type **`reset`** and press **Enter**. The console will display a list of reset commands available in the SP201-SA software, similar to the following.

```
user> reset
*******************************************************************************
*************************** RESET COMMAND HELP ********************************
*******************************************************************************
chan     - Reset CAS channel(s) [trunk/timeslot(s)] back to their initial state
stats    - Reset card statistics
systimer - Reset the relative time clock back to 0
*******************************************************************************
user>
```

7.2.3.1 The reset chan Command

You can perform a reset at the channel level. You use the *reset chan* command to reset a designated channel or multiple channels.

Note: The *reset chan* command is not used to implement configuration changes. Use the *reset chan* command only for cases in which the channel is not responding properly.

How to Use the reset chan Command

Caution: The *reset chan* command causes all calls on the specified channels to be dropped. In addition, the specified channels will drop any loopbacks and any disable statuses.

If a specified channel range intersects but does not encompass a disabled span, the *reset chan* command will be rejected, and no channels will be reset.

---

1 At the `user>` prompt, do one of the following:

a To reset a specific channel, type **`reset chan m:n`** and press **Enter**.

where *m* represents the trunk and *n* represents the timeslot you want to reset.

❖ A message similar to the following is displayed:

```
user> reset chan 1:4

channel reset
```

b To reset multiple channels, type **`reset chan m:n p:r`** and press **Enter**.

where *m:n* is the beginning of the range of trunks:timeslots you wish to reset, and *p:r* is the end of the range.

❖ A message similar to the following is displayed:

```
user> reset chan 1:4 2:23

channels reset
```

c To reset all channels, type **`reset chan all`** and press **Enter**.

❖ The SP201-SA asks for confirmation to reset all channels.

```
user> reset chan all
Are you sure you want to reset ALL channels on this card (y or n)? :
```

2 Do one of the following:

a If you want to reset the channel(s), type **`y`** and press **Enter**.

b If you do not want to reset the channel(s), type **`n`** and press **Enter**.

❖ A message similar to the following is displayed:

```
channels reset
```

7.2.3.2 The reset stats Command

You can reset the statistics without viewing them. (In protocol-conversion packages, you can also reset the statistics after viewing them. See Section 7.2.4.15, *The show stats Command*, to view statistics for protocol-conversion software.)

How to Use the reset stats Command

1 To reset statistics, type **`reset stats`** and press **Enter**.

❖ The following prompt appears:

```
Reset statistics? (y/n) :
```

2 Do one of the following:

a If you wish to reset the statistics, type **`y`** and press **Enter**.

❖ The statistical counters are reset to their initial values. The following prompt appears, followed by the `user>` prompt.

```
statistics reset
user>
```

Note: Resetting the statistics merely sets the counters to initial values. Accrual of statistics continues whenever the SP201-SA is running.

b If you do not wish to reset the statistics, type **n** and press **Enter**.

❖ The statistics remain at their current values. The following prompt appears, followed by the `user>` prompt.

```
statistics NOT reset
user>
```

7.2.3.3 The reset systimer Command

The reset systimer command resets the relative clock time to 0 (zero). To use the command, type **`reset systimer`** and press **Enter**. The system clock resets to zero, and the following message is displayed.

```
System relative time clock reset to 0
```

7.2.4 The show Commands

You use the *show* commands to display current, snapshot information about the SP201-SA's hardware configuration. The *show* commands use the format `show` *x*, where *x* can be any of several variables, discussed in the sections below.

To see a list of show commands, type **`show`** and press **Enter**. The console will display a list of show commands available in the SP201-SA software, similar to the following.

```
user> show
*** SHOW COMMAND HELP ***

banner     - Display application banner
buffers    - Display the size of message buffer pools
clocks     - Display current clock source for framing
connection - Display CIC/timeslot/peer timeslot relationships
events     - Display list of the statemachine Events and States
framers    - Display the configuration & status of the trunk (span) framers
hardware   - Display hardware configuration information
states     - Display the DTMF and Q767 statemachine states for all channels
stats      - Display card reset statistics
template   - Display the IAM & ACM template number configured for all channels
timeslots  - Display timeslot connectivity and data translation in effect
trace      - Display tracechan status
trunks     - Display trunk (span) framing, protocol & signaling link
             information
version    - Display application and boot monitor version information
```

7.2.4.1 The show alarms Command

You use the show alarms command to view detailed information about the trunk alarms on the SP201-SA. (To set alarms up, see Section 2.3.5, *The config alarms Command*.)

How to Use the show alarms Command

1 At the `user>` prompt, type **`show alarms`** and press **Enter**.

❖ Information similar to the following is displayed. Empty entries (dashes) indicate that there is no alarm. Asterisks indicate an alarm. Table 7-2 describes the parameters displayed for the *show alarms* command.

```
user> show alarms
*******************************************************************************
*************************** TRUNK ALARM STATUS ********************************
*******************************************************************************
                                    MF          MF
       Alarm            MF    YEL   YEL   SYNC  SYNC  CARR  FS
Trunk  Reporting  AIS   AIS   LOW   LOW   LOSS  LOSS  LOSS  ERRS  MAJOR  MINOR
*******************************************************************************
  1    ENABLED    ----  ----  ----  ----  ----  ----  ----  ----   ----   ----
  2    ENABLED    ----  ----  ----  ----  ----  ----  ----  ----   ----   ----
  3    ENABLED    ----  ----  ----  ----  ----  ----  ----  ----   ----   ----
  4    ENABLED    ----  ----  ----  ----  ----  ----  ----  ----   ----   ----
*******************************************************************************
AGGREGATE ALARM STATUS:                                              ----   ----
*******************************************************************************
user>
```

Table 7-2. show alarms Parameter Descriptions *(1 of 2)*

Parameter	Description
Alarm Reporting	Indicates whether the trunk's alarms are enabled.
ais	Indicates whether the alarm indication signal alarm is activated.
mf ais	Indicates whether the timeslot 16 multiframe (if in use) alarm indication signal is activated.
yellow	Indicates whether a remote alarm is activated.
mf yellow	Indicates whether the timeslot 16 (if in use) remote alarm is activated.
sync Loss	Indicates whether a synchronization loss alarm is activated.
mf Sync Loss	Indicates whether a timeslot 16 (if in use) synchronization loss alarm is activated.
carr Loss	Indicates whether carrier loss is on (the carrier signal has been lost) or off (the carrier signal is operational).
Fs errs	Indicates the presence of F-bit errors. (Not currently supported.)

Table 7-2. show alarms Parameter Descriptions *(2 of 2)*

Parameter	Description
ALARM STATUS:	
Major (also called a red alarm)	Indicates an active major alarm. Major alarms are Fs errs, carrLos, syncLos, mfSynLs, ais, and mtais.
Minor (also called a yellow alarm)	Indicates an active minor alarm. Minor alarms are yellow and mf yel.
Aggregate Alarm Status	Shows the alarm status for the SP201-SA (i.e., where there are major and/or minor alarms on trunks on the SP201-SA).

7.2.4.2 The show almrelay Command

This command lists the alarm relays set up on the SP201-SA. (To configure alarm relays, see Section 2.3.6, *The config almrelay Command*.)

How to Use the show almrelay Command

1 At the `user>` prompt, type **`show almrelay`** and press **Enter**.

❖ The alarm relay display for this SP201-SA appears.

```
user> show almrelay
********************************************************************************
************************* ALARM RELAY CONFIGURATION *************************
********************************************************************************
Trunk With Alarm     Alarm Propagated to Trunk
       1               -  2  -  -  -  -  -  -
       2               -  -  -  -  -  -  -  -
       3               1  2  -  -  -  -  -  -
       4               -  -  -  -  -  -  -  -
********************************************************************************
Alarm Relay Timer = 25 secs
********************************************************************************
user>
```

7.2.4.3 Viewing the ANI Table

Note: The commands for configuring and viewing Alternate Number Insertion (ANI) are available only if the optional ANI Feature has been installed.

The *show ani* command lets you see the ANIs in the ANI substitution table. The following procedure provides guidelines.

Note: To configure numbers in the ANI table, see Section 5.3.1, *Configuring ANI Substitution*.

How to Use the show ani Command

1 At the `user>` prompt, type **`show ani`** and press **Enter**.

❖ The console displays the contents of the ANI substitution table, one page at a time. If you have reached the end of the ANI table, the `user>` prompt follows the table. The display is similar to the following.

Note: The table is listed in four columns. Each column holds a pair of numbers. Within each pair, the number on the left identifies the table position, and the number on the right is the ANI.

```
user> show ani
  1 1234567890   2 1234567891   3 1234567892   4 1234567893
  5 1234567894   6 1234567895   7 1234567896   8 1234567897
  9 1234567898  10 1234567899  11 1234567900  12 1234567901
 13 1234567902  14 1234567903  15 1234567904  16 1234567905
 17 1234567906  18 1234567907  19 1234567908  20 1234567909
 21 1234567910  22 1234567911  23 1234567912  24 1234567913
 25 1234567914  26 1234567915  27 1234567916  28 1234567917
 29 1234567918  30 1234567919  31 1234567920  32 1234567921
 33 1234567922  34 1234567923  35 1234567924  36 1234567925
 37 1234567926  38 1234567927  39 1234567928  40 1234567929
 41 1234567930  42 1234567931  43 1234567932  44 1234567933
 45 1234567934  46 1234567935  47 1234567936  48 1234567937
 49 1234567938  50 1234567939  51 1234567940  52 1234567941
 53 1234567942  54 1234567943  55 1234567944  56 1234567945
 57 1234567946  58 1234567947  59 1234567948  60 1234567949
 61 1234567950  62 1234567951  63 1234567952  64 1234567953
 65 1234567954  66 1234567955  67 1234567956  68 1234567957
 69 1234567958  70 1234567959  71 1234567960  72 1234567961
 73 1234567962  74 1234567963  75 1234567964  76 1234567965
 77 1234567966  78 1234567967  79 1234567968  80 1234567969
 81 1234567970  82 1234567971  83 1234567972  84 1234567973
 85 1234567974  86 1234567975  87 1234567976  88 1234567977
 89 1234567978  90 1234567979  91 1234567980  92 1234567981
Press . to exit, any other character to continue:
```

2 After you have viewed this page of the ANI table, do one of the following:

a To terminate the display, type `.` (a period) and press **Enter**.

❖ The `user>` prompt is displayed.

b To see the next page of the table, type any other character and press **Enter** (or just press **Enter** without typing anything).

❖ The next page of the ANI table is displayed. If you have reached the end of the ANI table, the `user>` prompt follows the table. If you do not see the `user>` prompt, repeat Step 2.

7.2.4.4 The show banner Command

You use the *show banner* command to view manufacturer identification and release information.

How to Use the show banner Command

1 At any system prompt, type **`show banner`** and press **Enter**.

❖ Information similar to the following is displayed:

```
*************************************************************************
*                                                                       *
*                        +++ SignalPath Product Line +++                *
*                                                                       *
*                     Application: ETSI ISDN/R2 Standalone              *
*                      Application Part Number: 15174.1020              *
*                        Package Part Number: 15175.1020                *
*                        Release Date: 02/14/03 05:17:06                *
*                                                                       *
*                                                                       *
*                             Encore Networks, Inc.                     *
*                              45472 Holiday Drive                      *
*                            Dulles, Virginia 20166                     *
*                               TEL: 703-318-7750                       *
*                               FAX: 703-787-4625                       *
*                         http://www.encorenetworks.com                 *
*                                                                       *
*                                                                       *
*                 Copyright (c) 2002-2003 Encore Networks, Inc.         *
*                              All Rights Reserved                      *
*                                                                       *
*************************************************************************
user>
```

7.2.4.5 The show buffers Command

The show buffers command indicates the sizes of the message buffers and the operating system buffers.

How to Use the show buffers Command

1 At the `user>` prompt, type **`show buffers`** and press **Enter**.

❖ A display similar to the following appears.

```
user> show buffers
*************************************************************************
************************** MESSAGE BUFFERS STATUS **************************
*************************************************************************
                 Buffer Size Total Size  Total  Buffers Buffers Buffers Buffers
Buffer Type        (bytes)    (bytes)   Buffers  Used    Free    Used%   Free%
*************************************************************************
General messages   0536       1094512    2042    0018    2024     0.8%   99.2%
CAS messages       4032       0040320    0010    0000    0010     0.0%  100.0%
*************************************************************************
user>
```

7.2.4.6 The show ccstates Command

This command displays each ISDN channel's SS7–ISDN Call Control state and last event.

How to Use the show ccstates Command

1 At the `user>` prompt, type **`show ccstates`** and press **Enter**.

❖ Information similar to the following is displayed.

Note: Square brackets enclose the AGC's software application part number and version.

```
user> show ccstates
State - Last Event) [14598.0705]
Trunk/ts 1     2     3     4     5     6     7     8
 3/1    1-0   1-0   1-0   1-34  1-0   1-0   1-0   1-34
 3/9    1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0
 3/17   1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0
 3/25   1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0
 4/1    1-0   1-0   1-34  1-0   1-0   1-0   1-0   1-0
 4/9    1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0
 4/17   1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0
 4/25   1-0   1-0   1-0   1-0   1-0   1-0   1-0   1-0

user>
```

7.2.4.7 The show clocks Command

The *show clocks* command displays the SP201-SA's clocking configuration.

How to Use the show clocks Command

1 At the prompt, type **`show clocks`** and press **Enter**.

❖ Information similar to the following is displayed.

```
user> show clocks
*********************************************************
********** FRAMER CLOCK SOURCE CONFIGURATION **********
*********************************************************
Clock source configured:   INTERNAL CLOCK
  Clock source being used: Trunk 1
  PRIMARY   clock source:  Trunk 1
  SECONDARY clock source:  Trunk 7
  TERTIARY  clock source:  LOCAL OSCILLATOR
*********************************************************

user>
```

7.2.4.8 The show connections Command

The *show connections* command displays the relationship between a timeslot and its CIC for each side of the connection. It also indicates the connectivity between a timeslot and its peer timeslot. The display uses the following format:

a-u m:n p:q w-b

where:

a is the protocol used for the timeslot's trunk—for example, R2.

u is the CIC for the timeslot—for example, 00001.

m is the timeslot's trunk—for example, 1.

n is the timeslot—for example, 01.

and where:

p is the peer timeslot's trunk—for example, 5.

q is the peer timeslot—for example, 01.

w is the CIC for the peer timeslot—for example, 00001.

b is the protocol used for the peer timeslot's trunk—for example, C7.

How to Use the show connections Command

1 At the `user>` prompt, type **`show connections`** and press **Enter**.

❖ A display similar to the following appears. Each line shows the following:

- The protocol, CIC, trunk, and timeslot for the channel
- The trunk, timeslot, CIC, and protocol for the connected peer channel

```
user> show connections

    CIC           Timeslot     peerTimeslot    peerCIC
-------------------------------------------------------------
    R2-00001      1:01             5:01        00001-Q767
    R2-00002      1:02             5:02        00002-Q767
    R2-00003      1:03             5:03        00003-Q767
    R2-00004      1:04             5:04        00004-Q767
    R2-00005      1:05             5:05        00005-Q767
    R2-00006      1:06             5:06        00006-Q767
    R2-00007      1:07             5:07        00007-Q767
    R2-00008      1:08             5:08        00008-Q767
    R2-00009      1:09             5:09        00009-Q767
    R2-00010      1:10             5:10        00010-Q767
    R2-00011      1:11             5:11        00011-Q767
    R2-00012      1:12             5:12        00012-Q767
    R2-00013      1:13             5:13        00013-Q767
    R2-00014      1:14             5:14        00014-Q767
    R2-00015      1:15             5:15        00015-Q767
     none         1:16-OOS         none        none


Enter for next page...
any other key to exit...
```

2 After viewing the connections indicated, do one of the following:

a To exit the *show connections* command, type any character and press **Enter**.

❖ The *show connections* command aborts, and the `user>` prompt is displayed.

b To view the next page of connections, press **Enter**.

❖ The next page is displayed. Repeat Step 2.

```
    CIC           Timeslot     peerTimeslot    peerCIC
-------------------------------------------------------------
    R2-00017      1:17             5:17        00017-Q767
    R2-00018      1:18             5:18        00018-Q767
    R2-00019      1:19             5:19        00019-Q767
    R2-00020      1:20             5:20        00020-Q767
    R2-00021      1:21             5:21        00021-Q767
    R2-00022      1:22             5:22        00022-Q767
    R2-00023      1:23             5:23        00023-Q767
    R2-00024      1:24             5:24        00024-Q767


Enter for next page...
any other key to exit...
```

7.2.4.9 The show dchans Command

The *show dchans* command displays information and status about the signaling timeslot (D-channel) on each ISDN trunk.

How to Use the show dchans Command

1 At the prompt, type **`show dchans`** and press **Enter**.

❖ Information similar to the following is displayed.

```
user> show dchans
********************************************************************************
************************** ISDN D-CHANNEL STATUS ***************************
********************************************************************************
      Trunk            FAS/    Signaling   Interface  Time    # of   D-Channel
Trunk Type  Protocol   NFAS      Type        Type     Slot  Failures  Status
********************************************************************************
  3    E1   ETSI ISDN  FAS     D-Channel    Network    16     0000   Inactive
  4    E1   ETSI ISDN  FAS     D-Channel    Network    16     0000   Inactive
********************************************************************************
user>
```

7.2.4.10 The show events Command

You use the *show events* command to display a numbered list of defined events and the states they cause. This list is useful when analyzing trunk/timeslot problems.

Note: This command is intended for use by Technical Support personnel when customers report troubleshooting problems.

How to Use the show events Command

1 At the `user>` prompt, type **`show events`** and press **Enter**.

❖ The current list of available events, similar to the following, is displayed.

```
user> show events

R2 EVENTS
 0   NONE
 1   EVT_ACK_TIMEOUT
 2   EVT_ANSWER
 3   EVT_ANSWER_TIMEOUT
   ...
78   EVT_BOGUS

R2 STATES
 0   INVALID
 1   R2_IDLE
 2   R2_NO_SERVICE
 3   R2_RESET
   ...
24   R2_BUSY

Q767 EVENTS
 0   NONE
 1   EVT_ACK_REC
 2   EVT_ACK_TIMEOUT
 3   EVT_ACM
   ...
66   EVT_Q7CLEAR

Q767 STATES
 0   INVALID
 1   S7_IDLE
 2   S7C_NO_SERVICE
 3   S7_RESET
   ...
16   S7C_CLEARBACK

Done !
user>
```

7.2.4.11 The show fgd Command

If your SP201-SA is running the R1 protocol, you can use the *show fgd* command to view the current entries in the Feature Group D (FGD) information digits translation table.

Note: To add or delete table entries, see Section 3.3.3.2, *The config fgd Command*.

How to Use the show fgd Command

1 At the `user>` prompt, type **`show fgd`** and press **Enter**.

❖ The system displays the information digits translation table. The following is an example.

```
information    calling party
digits         category
23                8
04               12
24                3
End of table
user>
```

Note: If the informations digits translation table is empty, the display is similar to the following.

```
information    calling party
digits         category
End of table
user>
```

7.2.4.12 The show framers Command

You use the *show framers* command to view detailed information about the SP201-SA trunks.

How to Use the show framers Command

1 At the `user>` prompt, type **`show framers`** and press **Enter**.

❖ Information similar to the following is displayed.

```
user> show framers
*******************************************************************************
*************************** FRAMER CONFIGURATION ******************************
*******************************************************************************
         Trunk   Line        Line     Framing   Haul    Line      Trunk
 Trunk   Type    Impedance   Coding   Type      Type    Length    State
*******************************************************************************
   1      E1     120 Ohms    HDB3     CAS-CRC   Short   N/A       Initialized
   2      E1     120 Ohms    HDB3     CAS-CRC   Short   N/A       Initialized
   3      E1     120 Ohms    HDB3     CCS       Short   N/A       Initialized
   4      E1     120 Ohms    HDB3     CCS       Short   N/A       Initialized
*******************************************************************************
LIM type: 2 E1 120 Ohm/2 E1 120 Ohm
*******************************************************************************
user>
```

Table 7-3 describes the parameters displayed when you execute the *show framers* command.

Table 7-3. Parameter Descriptions for the show framers Command (1 of 2)

Parameter	Description
Trunk	Lists the trunk numbers (1–8).
Trunk Type	Indicates whether the connection is T1 or E1.
Line Impedance	Indicates the impedance (100 ohms for T1 lines; 75 ohms or 120 ohms for E1 lines).
Line Coding	Indicates the types of T1 and E1 coding used on the trunk (i.e., AMI or B8ZS for T1 and AMI or HDB3 for E1.
Framing Type	Indicates the type of trunk framing selected (e.g., D4 SF for T1 or 704 for E1).

Table 7-3. Parameter Descriptions for the show framers Command (2 of 2)

Parameter	Description
Haul Type	The general line length that the software configuration reflects. The default is **Short**, for a cable 0 to 133 feet (0 to 41 meters) long.
Line Length	Indicates the length of the T1 cable. (This parameter is not applicable for E1 lines.)
Trunk State	Indicates the trunk state. **Initialized** means that the trunk is fully operational.
LIM type	Indicates the type of LIM installed. The first entry describes trunks 1–4; the second entry describes trunks 5–8.

7.2.4.13 The show hardware Command

The *show hardware* command lists the hardware specifications for the SP201-SA. The command shows the device and its trunk configuration.

How to Use the show hardware Command

1 At the `user>` prompt, type **`show hardware`** and press **Enter**.

❖ A display similar to the following appears.

```
user> show hardware
********************************************************************************
************************** HARDWARE CONFIGURATION **************************
********************************************************************************
Platform:      SP201-SA
Configuration: 4 Trunks/0 Receive DSPs/1 QUICC
LIM Type:      2 T1 100 Ohm/2 T1 100 Ohm
********************************************************************************
user>
```

7.2.4.14 The show states Command

You use the *show states* command to display a list of current states for timeslots on the trunks, whether in service or out of service.

Note: This command is intended for use by Technical Support personnel when customers report troubleshooting problems.

How to Use the show states Command

1 At the `user>` prompt, type **`show states`** and press **Enter**.

❖ The list of current states, similar to the following, is displayed.

Note: In the display for the *show states* command, channels that are out of service display blanks. In addition, T1 trunks show timeslots 25 through 31 as blank because T1 trunks have only 24 channels. E1 trunks show timeslot 16 as blank because timeslot 16 is used for signaling.

```
user> show states
States (S7state-DTstate)

Trunk/ts 1     2     3     4     5     6     7     8
 1/1    3-3   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 1/9    3-3   3-3   3-3   3-3   3-3   3-3   3-3
 1/17   3-3   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 1/25   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 2/1    3-3   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 2/9    3-3   3-3   3-3   3-3   3-3   3-3   3-3
 2/17   3-3   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 2/25   3-3   3-3   3-3   3-3   3-3   3-3   3-3
 user>
```

7.2.4.15 The show stats Command

This command displays the statistical counters on the SP201-SA. This command also lets you reset the statistical counters.

How to Use the show stats Command

1 At the `user>` prompt, type **`show stats`** and press **Enter**.

❖ The statistical counters for the SP201-SA are displayed. A prompt also asks whether to reset the statistical counters to zero.

```
user> show stats
number of resets since last coldstart 3
number of calls to msExit since last coldstart 0
percentage of buffers remaining at last msExit 9

        reset statistics? (y/n) :
```

2 Do one of the following:

a To let the counters continue incrementing, type **`n`** and press **Enter**.

❖ The `user>` prompt is redisplayed.

b To reset the statistical counters, type **`y`** and press **Enter**.

❖ The routine indicates that the counters have been reset, and the `user>` prompt is redisplayed.

```
        reset statistics? (y/n) : y
statistics reset

user>
```

7.2.4.16 The show template Command

The show template command indicates which IAM template and ACM template are being used on each channel of the DTMF, R1, R2, or N5 trunks.

How to Use the show template Command

1 At the `user>` prompt, type **`show template`** and press **Enter**.

❖ The system displays the numbers of the IAM templates and ACM templates used on each CAS channel, similar to the following:

```
user> show template
Template (IAM No.-ACM No.)
Trunk/ts 1     2     3     4     5     6     7     8
 1/1    1-1   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 1/9    1-1   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 1/17   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 1/25
 2/1    1-1   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 2/9    1-1   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 2/17   1-1   1-1   1-1   1-1   1-1   1-1   1-1
 2/25
user>
```

Note: Each CAS channel can use one of five templates for IAM and one of five template for ACM. Usage of IAM and ACM templates is assigned in the procedures in Section 3.3.2.1, *The config dt Command*; Section 3.3.3.1, *The config r1 Command*; Section 3.3.4.1, *The config r2 Command*; and Section 3.3.5.1, *The config n5 command*.

7.2.4.17 The show time Command

The show time command displays the SP201-SA's current system time. (If you wish to set the system time, see Section 2.3.1, *The config time Command*.)

How to Use the show time Command

1 At the `user>` prompt, type **`show time`** and press **Enter**.

❖ If the SP201-SA's time has not been set previously, the following message appears.

```
Warning!  System date/time has not been set!
```

❖ In any case, then the following information is displayed:

```
user> show time
*******************************************************************************
***************************** SYSTEM DATE/TIME ********************************
*******************************************************************************
System Date and Time = Sat 2000/01/01 00:03:36.354
*******************************************************************************
user>
```

7.2.4.18 The show trace Command

This command displays the status of the traces on the SP201-SA, indicating the traces that are enabled on each channel.

Note: To enable or disable traces, see Section 7.2.5, *Traces*.

How to Use the show trace Command

1 At the `user>` prompt, type **`show trace`** and press **Enter**.

❖ A list of debug traces is displayed, indicating their statuses.

Note: The traces listed depend on the software on the SP201-SA.

- If there is only one trace available on the SP201-SA, the listing may be short (depending on the trace itself), as shown in the following example.

```
user> show trace
************************** TRACE CONFIGURATION ****************************
***************************************************************************
Traces     Status
***************************************************************************
isup:      on    Point code:  all          CIC:  102        MSG:  acm
[2130/08/25 18:22:44]: Command "show trace" completed
```

- If there are several traces available on the SP201-SA, the initial list is short, but the details may be quite long (depending on the traces), as shown in the following example.

```
user> show trace
***************************************************************************
************************** TRACE CONFIGURATION ****************************
***************************************************************************
Traces     Status
***************************************************************************
ccdebug:   off
ccerror:   off
cchigh:    off
ccmed:     off
isdncir0:  off
***************************************************************************
Display more traces? (y/n):
```

2 To see detailed trace information (for user and debug commands), type **y** and press **Enter**.

❖ The user traces for the channels on trunks 1 and 2 are displayed.

Note: The traces shown depend on the software on the SP201-SA.

```
Trunk 1              0         1         1         2         2         3
Traces (Enabled = T)  5         0         5         0         5         0
********************************************************************************
ccccb:        - - - - - - - - - - - - - - - - - - - - - - - -
ccfsm:        - - - - - - - - - - - - - - - - - - - - - - - -
isdnfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isdnmsg:      - - - - - - - - - - - - - - - - - - - - - - - -
isupfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isupmsg:      T T T T T T T T T T T T T T T T T T T T T T T T
********************************************************************************

Trunk 2              0         1         1         2         2         3
Traces (Enabled = T)  5         0         5         0         5         0
********************************************************************************
ccccb:        - - - - - - - - - - - - - - - - - - - - - - - -
ccfsm:        - - - - - - - - - - - - - - - - - - - - - - - -
isdnfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isdnmsg:      - - - - - - - - - - - - - - - - - - - - - - - -
isupfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isupmsg:      T T T T T T T T T T T T T T T T T T T T T T T T
********************************************************************************
Display more trunks? (y/n):
```

3 To see user trace information for the next two trunks (if this is an SP201-SA with more than two trunks), type **y** and press **Enter**.

❖ The user traces for the channels on trunks 3 and 4 are displayed.

```
Trunk 3              0         1         1         2         2         3
Traces (Enabled = T)  5         0         5         0         5         0
********************************************************************************
ccccb:        - - - - - - - - - - - - - - - - - - - - - - - -
ccfsm:        - - - - - - - - - - - - - - - - - - - - - - - -
isdnfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isdnmsg:      - - - - - - - - - - - - - - - - - - - - - - - -
isupfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isupmsg:      T T T T T T T T T T T T T T T T T T T T T T T T
********************************************************************************

Trunk 4              0         1         1         2         2         3
Traces (Enabled = T)  5         0         5         0         5         0
********************************************************************************
ccccb:        - - - - - - - - - - - - - - - - - - - - - - - -
ccfsm:        - - - - - - - - - - - - - - - - - - - - - - - -
isdnfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isdnmsg:      - - - - - - - - - - - - - - - - - - - - - - - -
isupfsm:      - - - - - - - - - - - - - - - - - - - - - - - -
isupmsg:      T T T T T T T T T T T T T T T T T T T T T T T T
********************************************************************************
[2020/09/07 23:58:48]: Command "show trace" completed

15694.1100-slot7-user>
```

7.2.4.19 The show trunks Command

You use the *show trunks* command to display the information about the trunks configured on the SP201-SA.

How to Use the show trunks Command

1 At the `user>` prompt, type **`show trunks`** and press **Enter**.

❖ Information similar to the following is displayed:

```
user> show trunks
Trunk Dchan Type  Protocol
------------------------
1           T1    R2
2           T1    R2
3     D24I  T1    ETSI ISDN
4     D24I  T1    ETSI ISDN

user>
```

7.2.4.20 The show version Command

You use the *show version* command to view the software version number and release date.

How to Use the show version Command

1 At the `user>` prompt, type **`show version`** and press **Enter**.

❖ Information similar to the following is displayed, where the *Release Date* format is month/day/year hour:minute:second. Hours are shown in a 24-hour format.

```
user> show version
************************************************************
************** APPLICATION VERSION INFORMATION **************
************************************************************
Application:             DTMF/ITU Q.767 C7 Standalone
Application Part Number: 14752.0705
Package Part Number:     15141.0705
Release Date:            10/18/01 20:45:15
************************************************************

user>
```

7.2.5 Traces

Traces are diagnostic commands; they are used only for debugging purposes. Each type of trace monitors a specific part of transmissions. In most cases, trace information should be collected and sent to Technical Services at Encore Networks, Inc., for analysis and problem detection.

Caution: Traces are disruptive; they affect system performance. They consume resources, slowing processing speed. Run a trace only to help analyze problems.

You can run more than one trace simultaneously. However, running multiple traces may cause the SP201-SA to reset.

Use of traces is not meant for a live network. Contact Technical Services before you use a trace command.

In SignalPath software version 1070, the trace commands changed from those of previous software versions. The former trace commands are not available in version 1070 and later. Table 7-4 lists the mapping of former trace commands (before software version 1070) to new trace commands (version 1070 and later).

Table 7-4. Mapping of Old to New Trace Commands *(1 of 2)*

Former Command	Former Command Type	Supported Trace	New Command	Application	New Command Type	Automated Use
config traceflags[1]	user	cc ccb	trace ccCcb	anything to ISDN	debug[2]	n.a.[3]
		cc debug	trace ccdebug	anything to ISDN	debug	n.a.
		cc error	trace ccerror	anything to ISDN	debug	n.a.
		cc state machine	trace ccfsm	anything to ISDN	debug	n.a.
		cc tracehi	trace cchigh	anything to ISDN	debug	n.a.
		cc tracemed	trace ccmed	anything to ISDN	debug	n.a.
		isdn raw cir 0	trace isdncir0	anything to ISDN	debug	n.a.
		isdn state machine	trace isdnfsm	anything to ISDN	debug	n.a.
		isdn raw	trace isdnmsg	anything to ISDN	user	yes
		isup state machine	trace isupfsm	anything to ISDN	debug	n.a.
		isup raw	trace isupmsg	CAS to ISDN	user	no
				SS7 to ISDN	user	yes
trace on/ off[4]	user	trace	trace isup	CAS to SS7	user	yes
				CAS to ISDN	user	no
				SS7 to SS7	user	yes

Table 7-4. Mapping of Old to New Trace Commands (2 of 2)

Former Command	Former Command Type	Supported Trace	New Command	Application	New Command Type	Automated Use
tracechan *tk*:*ts* on/off[5]	user	tracechan	trace cas	CAS bulk caller	user	yes
				CAS to anything	user	yes
traceiw on/off	user	traceiw	trace iw	CAS to anything	debug	n.a.

1. The former *config traceflags* command has been divided into its constituent parts.
2. To use debug commands, contact your Encore Networks, Inc., sales representative.
3. Automated use applies only to user commands; "n.a." means "not applicable."
4. As indicated, the former *trace* command has become the new *trace isup* command. There is also a new *trace* command. In the new *trace* command, *trace on* enables automated trace functions, and *trace off* stops all traces. To use the new *trace* command, see Section 7.2.5.5, *The trace Command*.
5. In this command, *tk* represents the trunk number and *ts* represents the trunk's timeslot.

Note: Trace information is derived from the signaling timeslots but traces are not run on the signaling timeslots. If you specify a range that begins or ends on a signaling timeslot, a warning message will indicate that the trace cannot run on a signalling timeslot or on its peer timeslot. However, all other valid traces will be performed. (If a specified range includes one or more signaling timeslots, but the beginning and ending timeslots are not signaling timeslots, no message is displayed. The trace is run without such comment.)

The following subsections describe trace commands used to monitor a card's channels:

- Section 7.2.5.1, *The trace cas Command*
- Section 7.2.5.2, *The trace isup Command*
- Section 7.2.5.3, *The trace isdnmsg Command*
- Section 7.2.5.4, *The trace isupmsg Command*
- Section 7.2.5.5, *The trace Command*

Note: The *show trace* command indicates the traces that are enabled. See Section 7.2.4.18, *The show trace Command*.

7.2.5.1 The trace cas Command

The *trace cas* command, available for CAS protocols, is used to display detailed information about interworking messages sent between protocols. You can trace one or more timeslots, up to all timeslots on the SP201-SA.

The *trace cas* command replaces the former *tracechan* command.

You can specify this trace; it is also an automated trace function. (To use automated trace functions, see Section 7.2.5.5, *The trace Command*.)

How to Enable the trace cas Command

Caution: Do not use the *trace cas* command for more than one channel on a card when the card is passing a large volume of traffic; otherwise, you may lose calls.

1 If you want to turn *tracechan* on, type **`trace cas m:n on`** at the `user>` prompt, and press **Enter**,

where *m* represents the trunk and *n* represents the timeslot you want to trace.

❖ While the trace for a single timeslot is on, information similar to the following is displayed. (Information is displayed in a different format for more than one timeslot.)

```
user> trace cas 1:2 on
Trace enabled
[2004/08/02 19:37:19]: Command "trace cas 1:2 on" completed
user>

[2004/08/02 19:37:19.326]                in out  [14914.1100] [1:2]
hh:mm:ss:ttt  task  tk/ts input  output  dt  dt  event           state [1:2]
19:37:19.328  DT     1:2                       NONE            DT_RESET
19:37:19.328  DT     1:2  0000    0000         EVT_RELEASE     DT_IDLE
19:37:19.328  S7-->  5:2                       iam             on CIC 2
19:37:19.328  S7                               EVT_C_IAM       S7C_SEIZE
19:37:19.328  DT     1:2  0000    0000       -  EVT_C_IAM       CDT_PREP CALL
19:37:19.328  DT     1:2  0000    0000         EVT_C_IAM       CDT_SEIZE
19:37:19.328  DT     1:2  0000    0000         EVT_NEXT_STATE  CDT_DIALDT
19:37:19.328  DT     1:2  0000    1000
19:37:19.328  DT     1:2  0000    1000       1
19:37:19.328  DT     1:2  0000    1000       2
etc.
```

where:

- *hh*:*mm*:*ss.ttt* represents the time of the trace information, in hours, minutes, seconds, and thousandths of a second.
- *task* represents the type of signaling being performed.
- *tk/ts* represents the trunk and timeslot being traced.
- *input* represents the signaling bits (A, B, C, and D) being input to the SP201-SA.
- *output* represents the signaling bits (A, B, C, and D) the SP201-SA is sending back.
- *in dt* is used for CAS signals coming in—that is, from SS7 to CAS. (In the example, the CAS protocol is DTMF.)
- *out dt* is used for CAS signals going out—that is, from CAS to SS7. (In the example, the CAS protocol is DTMF.)
- *event* represents the event that occurred in the transmission.
- *state* represents the state caused by the event.
- [*yyyyy.zzzz*] (in the example, [14914.1100]) indicates the software application and version (release) the card is using.
- [*m*:*n*] (in the example, [1:2]) indicates the trunk and channel being traced. (This is shown when tracing only one channel.)

Caution: You can enable *trace cas* for more than one timeslot, as shown in the following list of formats for the *trace cas* command; however, this is not advised because of the possibility of losing calls.

```
usage: trace cas [trk:ts] [on/off]
   or  trace cas [trk:ts] [trk:ts] [on/off]
   or  trace cas [trk] [on/off]
   or  trace cas all [on/off]
```

If you enable *trace cas* for more than one timeslot, a warning is displayed.

```
user> trace cas all on

************************************************************
* WARNING!!!  Multi-channel tracing is NOT intended for    *
*             operational use!  Its use in high traffic    *
*             may cause improper operation and may even    *
*             cause a program reset.                       *
************************************************************

Do you wish to continue (y/N) : y
```

Then, if you answer **y**, the trace is enabled.

```
Traces enabled
[2130/08/25 18:57:02]: Command "trace cas all on" completed

15586.1100-slot4-user>
```

Information will be displayed, similar to that shown below.

Note: If you enable *trace cas* for more than one timeslot, and later wish to stop the trace, type **`trace cas off`** and press **Enter**.

```
user> 18:57:17.263  S7--> 5:01  rel   on CIC 1
18:57:17.264  S7<-- 5:01  rsc   on CIC 1
18:57:17.265  S7                                EVT_T17_TIMEOU  S7_RESET
18:57:17.267  S7--> 5:02  rel   on CIC 2
18:57:17.267  S7<-- 5:02  rsc   on CIC 2
18:57:17.268  S7                                EVT_T17_TIMEOU  S7_RESET
18:57:17.270  S7--> 5:03  rel   on CIC 3
18:57:17.270  S7<-- 5:03  rsc   on CIC 3
18:57:17.271  S7                                EVT_T17_TIMEOU  S7_RESET
. . .
18:57:17.337  S7--> 5:24  rel   on CIC 24
18:57:17.338  S7<-- 5:24  rsc   on CIC 24
18:57:17.338  S7                                EVT_T17_TIMEOU  S7_RESET
18:57:17.340  S7--> 6:01  rel   on CIC 32
18:57:17.341  S7<-- 6:01  rsc   on CIC 32
18:57:17.341  S7                                EVT_T17_TIMEOU  S7_RESET
. . .
```

```
18:57:17.453  S7--> 7:12  rel   on CIC 74
18:57:17.453  S7<-- 7:12  rsc   on CIC 74
18:57:17.454  S7                                EVT_T17_TIMEOU  S7_RESET
. . .
18:57:17.571  S7--> 8:24  rel   on CIC 117
18:57:17.571  S7<-- 8:24  rsc   on CIC 117
18:57:17.572  S7                                EVT_T17_TIMEOU  S7_RESET

trace cas off

All channel traces are now off
[2130/08/25 18:57:47]: Command "trace cas off" completed
```

How to Turn Off the trace cas Command

1 If you want to turn *trace cas* off, do one of the following:

a Type **`trace cas m:n off`** and press **Enter**.

❖ This command turns off the *trace cas* command for trunk *m*, timeslot *n*.

b Type **`trace cas off`** and press **Enter**.

❖ As shown below, this command turns off the *trace cas* command for all channels.

```
trace cas off

All channel traces are now off
[2130/08/25 18:57:47]: Command "trace cas off" completed
```

c Type **`trace off`** and press **Enter**.

❖ All traces are stopped.

```
user> trace off
[2129/01/06 23:05:25]: Command "trace off" completed

user>
```

7.2.5.2 The trace isup Command

The *trace isup* command, available for SS7 protocols, allows you to trace all or specified details of ANSI SS7 or ITU C7 messages. The *trace isup* command replaces the former *trace* command. (To use the new *trace* command, see Section 7.2.5.5, *The trace Command*.)

You can specify this trace. In CAS-to-SS7 signaling or SS7-to-SS7 signaling, this is also an automated trace function. (To use automated trace functions, see Section 7.2.5.5, *The trace Command*.)

Note: If you wish to trace more than one detail but not all details, you must enter the *trace isup* command once for each detail.

How to Enable the trace isup Command

1 To trace an SS7 message type, type **`trace isup on`** at the `user>` prompt, and press **Enter**.

❖ The trace starts. One of the following messages is displayed.

- If the card's SS7 software is only for ANSI SS7 or only for ITU C7 (or a variant), the following prompt is displayed. Go to Step 3.

```
Point Code :
```

- If the card has software for ANSI SS7 to ITU C7 (or a variant), a prompt asks which side (ANSI or ITU) to configure.

```
Enter 'ansi' or 'itu' if point code to be used :
```

2 Do one of the following:

a If you do not wish to enter a point code, press **Enter** without typing anything.

Note: We recommend the default (that is, not typing a point code), so that the trace will accept transmissions from all point codes.

If you want to use a point code, the system will filter transmissions to accept messages only from the point code you enter.

❖ The following prompt is displayed. Go to Step 4.

```
CIC :
```

b If you wish to enter a point code for ANSI SS7 connections, type **`ansi`** and press **Enter**.

c If you wish to enter a point code for ITU C7 connections, type **`itu`** and press **Enter**.

❖ If you typed **`ansi`** or **`itu`**, the following prompt is displayed:

```
Point Code :
```

3 Type the point code, in the format *x-y-z*, and press **Enter**.

Note: We recommend the default (that is, not typing a point code), so that the trace will accept transmissions from all point codes.

If you want to use a point code, the system will filter transmissions to accept messages only from the point code you enter.

Note: Get all point codes from your network administrator.

❖ The following prompt appears.

```
CIC :
```

4 Type the number of the CIC you wish to trace, and press **Enter.**

❖ The following prompt, for message type, is displayed:

```
Message Type (enter "?" for list):
```

5 Do one of the following:

a If you know the code for the message type you wish to trace, go to Step 6.

b If you wish to abandon the trace, type **`exit`** and press **Enter**.

❖ The trace aborts and the `user>` prompt is displayed. Go to Step 7.

c If you wish to see a list of codes for message type, type **`?`** and press **Enter**.

❖ The following list appears, followed by the prompt for message type:

```
message type, one of
   ALL    acm    anm    blo    bla    ccr    cfn    cgb
  cgba    cqm    cqr    cgu   cgua    cmc    cmr   cmrj
   con    cot    cpg    cqm    cqr    cra    crm    cvr
   cvt    drs    exm    faa    far    fot    frj    grs
  grsa    iam    inf    inr    lpa    olm    pam    rel
   res    rlc    rsc    sam    sus    uba    ubl   ucic
   usr

enter "exit" to abort command
Message Type (enter "?" for list):
```

6 Do one of the following:

a To trace all SS7 messages on this CIC, type **`all`** and press **Enter**.

b To trace a specific message type, type its code (for example, **`iam`**) and press **Enter**.

❖ The following message appears, followed by the `user>` prompt.

```
Command "trace isup on" completed
```

7 If you wish to enable *trace isup* for another message type, go to Step 1.

How to Disable the trace isup Command

1 You may turn off *trace isup* at any point. To do so, type **`trace isup off`** and press **Enter.**

❖ All *trace isup* routines stop, and the `user>` prompt is displayed.

```
Command "trace isup off" completed

user>
```

7.2.5.3 The trace isdnmsg Command

The *trace isdnmsg* command, available for ISDN protocols, is used to enable or disable display of the ISDN raw message trace.

You can specify this trace; it is also an automated trace function. (To use automated traces, see Section 7.2.5.5, *The trace Command*.)

Note: The *trace isdnmsg* command is a constituent part of the former *config traceflags* command.

How to Use the trace isdnmsg Command

1 To start an ISDN raw message trace, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To start an ISDN raw message trace for a specific timeslot, type **`trace isdnmsg trk:ts on`** and press **Enter**.

b To start an ISDN raw message trace for a range of timeslots, type **`trace isdnmsg trk1:ts1 trk2:ts2 on`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To start an ISDN raw message trace for all timeslots on a single trunk, type **`trace isdnmsg trk on`** and press **Enter**.

d To start an ISDN raw message trace for all timeslots on all trunks, type **`trace isdnmsg all on`** and press **Enter**.

❖ The ISDN raw message trace is started. A message similar to the following is displayed.

```
Command "trace isdnmsg 3:4 7:4 on" completed
```

2 To end an ISDN raw message trace, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To stop an ISDN raw message trace for a specific timeslot, type **`trace isdnmsg trk:ts off`** and press **Enter**.

b To stop an ISDN raw message trace for a range of timeslots, type **`trace isdnmsg trk1:ts1 trk2:ts2 off`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To stop an ISDN raw message trace for all timeslots on a single trunk, type **`trace isdnmsg trk off`** and press **Enter**.

d To stop an ISDN raw message trace for all timeslots on all trunks, type **`trace isdnmsg all off`** and press **Enter**.

❖ The ISDN raw message trace is stopped. A message similar to the following is displayed.

```
Command "trace isdnmsg all off" completed
```

7.2.5.4 The trace isupmsg Command

The *trace isupmsg* command, available for ISDN protocols, is used to enable or disable display of the ISUP raw message trace.

You can specify this trace; in SS7-to-ISDN signaling, it is also an automated trace function. (To use automated traces, see Section 7.2.5.5, *The trace Command*.)

Note: The *trace isupmsg* command is a constituent part of the former *config traceflags* command.

How to Use the trace isupmsg Command

1 To start an ISUP raw message trace, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To start an ISUP raw message trace for a specific timeslot, type **`trace isupmsg trk:ts on`** and press **Enter**.

b To start an ISUP raw message trace for a range of timeslots, type **`trace isupmsg trk1:ts1 trk2:ts2 on`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To start an ISUP raw message trace for all timeslots on a single trunk, type **`trace isupmsg trk on`** and press **Enter**.

d To start an ISUP raw message trace for all timeslots on all trunks, type **`trace isupmsg all on`** and press **Enter**.

❖ The ISUP raw message trace is started. A message similar to the following is displayed.

```
Command "trace isupmsg 2:14 7:9 on" completed
```

2 To end an ISUP raw message trace, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To stop an ISUP raw message trace for a specific timeslot, type **`trace isupmsg trk:ts off`** and press **Enter**.

b To stop an ISUP raw message trace for a range of timeslots, type **`trace isupmsg trk1:ts1 trk2:ts2 off`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To stop an ISUP raw message trace for all timeslots on a single trunk, type **`trace isupmsg trk off`** and press **Enter**.

d To stop an ISUP raw message trace for all timeslots on all trunks, type **`trace isupmsg all off`** and press **Enter**.

❖ The ISUP raw message trace is stopped. A message similar to the following is displayed.

```
Command "trace isupmsg all off" completed
```

7.2.5.5 The trace Command

Note: The new *trace* command, in SignalPath software version 1070 and later, is not a revision of the former *trace* command; it is a different command. Please read this section carefully for details.

To use the replacement for the former *trace* command, see Section 7.2.5.2, *The trace isup Command*.

The *trace* command, available for all protocols, turns on the automated trace functions available on the SP201-SA. The specific trace functions available depend on the software in the SP201-SA.

The following sections discuss trace functions that are automated. (Table 7-4 indicates the software in which specific traces are automated.)

- Section 7.2.5.1, *The trace cas Command*
- Section 7.2.5.2, *The trace isup Command*
- Section 7.2.5.3, *The trace isdnmsg Command*
- Section 7.2.5.4, *The trace isupmsg Command*

The following sections discuss use of the *trace* command:

- Section 7.2.5.5.1, *Using trace off*
- Section 7.2.5.5.2, *Using trace on*

7.2.5.5.1 Using trace off

The *trace off* command is used to end all trace functions, not just automated trace functions. When you use this command, you can stop all traces on specific trunks and timeslots, or you can stop all traces on all timeslots.

Note: If you wish to start automated traces, see Section 7.2.5.5.2, *Using trace on*.

How to Use the trace off Command

1 To end all trace functions, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To stop automatic trace functions for a specific timeslot, type **`trace off trk:ts`** and press **Enter**.

b To stop automatic trace functions for a range of timeslots, type **`trace off trk1:ts1 trk2:ts2`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To stop automatic trace functions for all timeslots on a single trunk, type **`trace off trk`** and press **Enter**.

d To stop automatic trace functions for all timeslots on all trunks, type **`trace off`** and press **Enter**.

❖ If you used *trace off* without specifying trunks or timeslots, all traces on all timeslots on the card stop. If you specified trunks and timeslots on the card, traces on the specified trunks and timeslots stop. A message similar to the following is displayed.

```
Command "trace off" completed
```

7.2.5.5.2 Using trace on

The *trace on* command is used to start all automated trace functions that are available in the card's software. When you use this command, you can start automated traces on specific trunks and timeslots, or you can start automated traces on all timeslots.

How to Use the trace on Command

1 To start automatic trace functions, do one of the following at the `user>` prompt, where *trk* represents the trunk number and *ts* represents the timeslot (channel) number:

a To start automatic trace functions for a specific timeslot, type **`trace on trk:ts`** and press **Enter**.

b To start automatic trace functions for a range of timeslots, type **`trace on trk1:ts1 trk2:ts2`** and press **Enter**,

where *trk1*:*ts1* represents the range's beginning trunk and timeslot and *trk2*:*ts2* represents the ending trunk and timeslot.

c To start automatic trace functions for all timeslots on a single trunk, type **`trace on trk`** and press **Enter**.

d To start automatic trace functions for all timeslots on all trunks, type **`trace on all`** and press **Enter**.

❖ If you used *trace on all*, the automatic trace functions are started on all timeslots on the card. If you specified trunks or timeslots, the automatic trace functions are started on the specified trunks and timeslots. A message similar to the following is displayed.

```
Command "trace on 1:20" completed
```

To end all trace functions, follow the procedure in Section 7.2.5.5.1, *Using trace off*.

7.3 Troubleshooting the SP201-SA Hardware

The following sections contain tables that list problems you may encounter, possible causes of those problems, and recommended solutions when installing, configuring, and maintaining the SP201-SA equipment.

7.3.1 Troubleshooting during Installation of the SP201-SA

Table 7-5 describes problems you could encounter during installation, along with possible solutions.

Table 7-5. Possible Installation Problems *(1 of 2)*

Problem	Possible Cause	Possible Solution
The unit is not receiving power.	• Unit is not connected to power source.	• Make sure the power cord is plugged into a power source. See Section 1.4, *Connecting to the Power Source*.
	• A power supply is not functioning properly.	• Call Technical Services.
	• The power supply temperature has reached or exceeded 212° F (100° C).	• Determine the cause of the elevated temperature and lower it.
	• The power supply voltage is below the minimum required voltage.	• Check and adjust the incoming voltage to match the SP201-SA requirements.

Table 7-5. Possible Installation Problems *(2 of 2)*

Problem	Possible Cause	Possible Solution
The control console is not communicating with the SP201-SA.	• Connector pins are incorrectly set.	• Refer to Section 1.5, *Connecting to the Control Console*, for correct pinouts.
	• The RS-232 configuration parameters are set incorrectly.	• Check the settings against those recommended in Section 1.5, *Connecting to the Control Console*. Then check the documentation for your PC or terminal.
	• You are incorrectly connecting a DTE or DCE device.	• Refer to Section 1.5, *Connecting to the Control Console*, for options you can use to establish communication.

7.3.2 Troubleshooting during Configuration and Maintenance of the SP201-SA

Table 7-6 describes possible solutions to problems you could encounter while configuring, operating, and maintaining the SP201-SA.

Table 7-6. Possible Configuration Problems

Problem	Possible Cause	Possible Solution
Signaling conversion is behaving erratically.	• Trunks may be down or in alarm states.	• Check the trunks for alarm status.
	• The software configuration may need adjustment.	• Review the settings for each parameter. Revise settings as needed. In particular, check any manual configuration of connections, timeslots, or CICs. • If necessary, warmstart the SP201-SA.
	• The hardware configuration does not match the software configuration.	• After checking that the hardware configuration is correct, warmstart the SP201-SA. • If necessary, execute the *coldstart* command to reset the SP201-SA parameters to factory defaults. **Caution:** If you perform a *coldstart*, you will lose all custom settings, and you will need to reconfigure them.